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#9

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ENTERED

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/060,848

DATE: 06/17/2002 P.6
TIME: 13:39:03

Input Set : A:\12557-002001.txt
Output Set: N:\CRF3\06172002\J060848.raw

```
  3 <110> APPLICANT: Kloek, Andrew
  4        Williams, Deryck Jeremy
  5        Salmon, Brandy Leigh
  7 <120> TITLE OF INVENTION: NEMATODE MDH-LIKE SEQUENCE
  9 <130> FILE REFERENCE: 12557-002001
 11 <140> CURRENT APPLICATION NUMBER: US 10/060,848
C--> 12 <141> CURRENT FILING DATE: 2002-06-10
 14 <150> PRIOR APPLICATION NUMBER: US 60/266,037
 15 <151> PRIOR FILING DATE: 2001-02-02
 17 <160> NUMBER OF SEQ ID NOS: 15
 19 <170> SOFTWARE: FastSEQ for Windows Version 4.0
 21 <210> SEQ ID NO: 1
 22 <211> LENGTH: 1327
 23 <212> TYPE: DNA
 24 <213> ORGANISM: Meloidogyne incognita
 26 <220> FEATURE:
 27 <221> NAME/KEY: CDS
 28 <222> LOCATION: (55)...(1152)
 30 <221> NAME/KEY: misc_feature
 31 <222> LOCATION: (1)...(1327)
 32 <223> OTHER INFORMATION: n = A,T,C or G
W--> 34 <400> 1
 35 caagtttgag atatttaaat tattattttg gtgctaagaa aaattttgtg aaaa atg      57
 36                                                               Met
 37                                                                 1
 39 aat tat tca aag gat gcc cca gaa ttt gtt gtg tct cca aaa gat gca     105
 40 Asn Tyr Ser Lys Asp Ala Pro Glu Phe Val Val Ser Pro Lys Asp Ala
 41               5                  10                  15
 43 cgc gaa ttt gtt gta aaa tgt atg caa aca gtt gga aca tcc cct gac     153
 44 Arg Glu Phe Val Val Lys Cys Met Gln Thr Val Gly Thr Ser Pro Asp
 45          20                  25                  30
 47 cat gct ggt caa tta gca gat cta tta ttg gat gct gat ctt gtt gga     201
 48 His Ala Gly Gln Leu Ala Asp Leu Leu Leu Asp Ala Asp Leu Val Gly
 49          35                  40                  45
 51 cac tat agt cat ggt cta aat cga ctt cat att tat gtg gat gac gtc     249
 52 His Tyr Ser His Gly Leu Asn Arg Leu His Ile Tyr Val Asp Asp Val
 53 50                  55                  60                  65
 55 aaa aac gga gtt aaa gga aat gga gtt cca aaa gtg tta aaa caa aaa     297
 56 Lys Asn Gly Val Lys Gly Asn Gly Val Pro Lys Val Leu Lys Gln Lys
 57                  70                  75                  80
 59 gga ggc act gct tgg gtt gat gga gaa aat ctt ctg ggt gca gtt gtt     345
 60 Gly Gly Thr Ala Trp Val Asp Gly Glu Asn Leu Leu Gly Ala Val Val
 61          85                  90                  95
```

RAW SEQUENCE LISTING
PATENT APPLICATION: US/10/060,848

Input Set : A:\12557-002001.txt
Output Set: N:\CRF3\06172002\J060848.raw

```
63 gga aac ttc tgt acc gac ttg gct att aaa ttg gct aaa gaa ttt ggc        393
64 Gly Asn Phe Cys Thr Asp Leu Ala Ile Lys Leu Ala Lys Glu Phe Gly
65          100                 105                 110
67 gtt gct tgg gtg gta aca aaa aat tct aat cat tat gga gct tgt caa        441
68 Val Ala Trp Val Val Thr Lys Asn Ser Asn His Tyr Gly Ala Cys Gln
69     115                 120                 125
71 cat tat act aag aaa att gca aat gca gga atg gtg gga atg tct ttt        489
72 His Tyr Thr Lys Lys Ile Ala Asn Ala Gly Met Val Gly Met Ser Phe
73 130                 135                 140                 145
75 aca aat aca tcg cct ctc atg ttc ccc tgc cga tct tct gag att gga        537
76 Thr Asn Thr Ser Pro Leu Met Phe Pro Cys Arg Ser Ser Glu Ile Gly
77                 150                 155                 160
79 ctt ggt aca aac cct ctt tct tgt tgt gtc aac tcg gaa aag aca gga        585
80 Leu Gly Thr Asn Pro Leu Ser Cys Cys Val Asn Ser Glu Lys Thr Gly
81                 165                 170                 175
83 gac agt ttt ttg tta gac atg gct acg aca act gtt gct ctt gga aag        633
84 Asp Ser Phe Leu Leu Asp Met Ala Thr Thr Thr Val Ala Leu Gly Lys
85          180                 185                 190
87 gta gag ctg gca gat tgt cgc ggt aaa aca caa att ccc tcc aca tgg        681
88 Val Glu Leu Ala Asp Cys Arg Gly Lys Thr Gln Ile Pro Ser Thr Trp
89     195                 200                 205
91 ggt gcc gat tct aaa ggc aat cca tcg act gat aca caa gtt gtt tta        729
92 Gly Ala Asp Ser Lys Gly Asn Pro Ser Thr Asp Thr Gln Val Val Leu
93 210                 215                 220                 225
95 cac ggt ggc gga ctt ttg cct tta ggc ggt ata gaa gag acg gga tct        777
96 His Gly Gly Gly Leu Leu Pro Leu Gly Gly Ile Glu Glu Thr Gly Ser
97                 230                 235                 240
99 tac aaa gga acg ggt ctt tca atg atg ggt gaa ttg ttt tgt gga att        825
100 Tyr Lys Gly Thr Gly Leu Ser Met Met Gly Glu Leu Phe Cys Gly Ile
101                 245                 250                 255
103 ttg gca ggg tca agt ttt gga aaa aat gta cga tta tgg ggg caa tca        873
104 Leu Ala Gly Ser Ser Phe Gly Lys Asn Val Arg Leu Trp Gly Gln Ser
105          260                 265                 270
107 cac aaa gcc gct gac aat ggc caa tgt ttt gtt gct att gat caa gaa        921
108 His Lys Ala Ala Asp Asn Gly Gln Cys Phe Val Ala Ile Asp Gln Glu
109     275                 280                 285
111 tgt ttt gcc cca gga ttt gct cct cgt tta caa caa ttt ttg gat gaa        969
112 Cys Phe Ala Pro Gly Phe Ala Pro Arg Leu Gln Gln Phe Leu Asp Glu
113 290                 295                 300                 305
115 aca cgg aat ttg aaa ccg att tct gaa gaa aag cct gtt cta gtg cct       1017
116 Thr Arg Asn Leu Lys Pro Ile Ser Glu Glu Lys Pro Val Leu Val Pro
117                 310                 315                 320
119 gga gat cct gaa aga atg aat aca gaa tat agc caa aag gct gga ggt       1065
120 Gly Asp Pro Glu Arg Met Asn Thr Glu Tyr Ser Gln Lys Ala Gly Gly
121                 325                 330                 335
123 ttg gta tac caa gaa ggg cag ata aaa gct ttg gaa gag ttg gcc aca       1113
124 Leu Val Tyr Gln Glu Gly Gln Ile Lys Ala Leu Glu Glu Leu Ala Thr
125                 340                 345                 350
127 aaa tgt gat gtt caa atg ttc tca tac aaa cga cta aaa tgaggatgag       1162
```

RAW SEQUENCE LISTING   DATE: 06/17/2002
PATENT APPLICATION: US/10/060,848   TIME: 13:39:04

Input Set : A:\12557-002001.txt
Output Set: N:\CRF3\06172002\J060848.raw


```
    128 Lys Cys Asp Val Gln Met Phe Ser Tyr Lys Arg Leu Lys
    129       355                 360                 365
    131 atttaaatat tttttgtgt agctgaaact gacttcaaac gagaaatgaa caatttccta    1222
    132 aaaagcagtt agataagggt ttatttttca tttatttatt ttttaacctc attttttata    1282
W--> 133 tacgaataaa attaatgctc naaaaaaaaa aaaaaaaaaa aaaaa                   1327
    135 <210> SEQ ID NO: 2
    136 <211> LENGTH: 2088
    137 <212> TYPE: DNA
    138 <213> ORGANISM: Meloidogyne incognita
    140 <220> FEATURE:
    141 <221> NAME/KEY: CDS
    142 <222> LOCATION: (28)...(1125)
    144 <221> NAME/KEY: misc_feature
    145 <222> LOCATION: (1)...(2088)
    146 <223> OTHER INFORMATION: n = A,T,C or G
W--> 148 <400> 2
    149 tggtgctaag aaaaattttg tgcgaaa atg aat tat tca aag gat gcc cca gaa     54
    150                                 Met Asn Tyr Ser Lys Asp Ala Pro Glu
    151                                  1               5
    153 ttt gtt gtc tct cca aaa gat gct cgc gaa ttt gtt gta aaa tgt atg      102
    154 Phe Val Val Ser Pro Lys Asp Ala Arg Glu Phe Val Val Lys Cys Met
    155  10              15                  20                  25
    157 caa aca gtt gga aca tcc cct gac cat gct ggt caa tta gca gat ctc      150
    158 Gln Thr Val Gly Thr Ser Pro Asp His Ala Gly Gln Leu Ala Asp Leu
    159             30                  35                  40
    161 tta tta gat gct gat ctt gtt ggg cat tac agt cat ggt cta aat cgg      198
    162 Leu Leu Asp Ala Asp Leu Val Gly His Tyr Ser His Gly Leu Asn Arg
    163             45                  50                  55
    165 ctt cat att tat gtg gat gac gtc aaa aat gga gtt aaa gga aat gga     246
    166 Leu His Ile Tyr Val Asp Asp Val Lys Asn Gly Val Lys Gly Asn Gly
    167         60                  65                  70
    169 gtt cca aaa gtg tta aaa caa aaa gga ggc act gct tgg gtg gat gga      294
    170 Val Pro Lys Val Leu Lys Gln Lys Gly Gly Thr Ala Trp Val Asp Gly
    171     75                  80                  85
    173 gaa aat ctt ttg ggt gca gtt gtt ggc aac ttc tgt acc gat ttg gct      342
    174 Glu Asn Leu Leu Gly Ala Val Val Gly Asn Phe Cys Thr Asp Leu Ala
    175  90                  95                  100                 105
    177 att aaa ttg gct aaa gaa ttt ggt gtt gct tgg gtg gta aca aaa aat      390
    178 Ile Lys Leu Ala Lys Glu Phe Gly Val Ala Trp Val Val Thr Lys Asn
    179                 110                 115                 120
W--> 181 tct aat cat tat gga gct ngt caa cat tat act aag aaa att gcg aat      438
W--> 182 Ser Asn His Tyr Gly Ala Xaa Gln His Tyr Thr Lys Lys Ile Ala Asn
    183             125                 130                 135
    185 gca gga atg gtg gga atg tca ttt aca aat act tca cct ctc atg ttc      486
    186 Ala Gly Met Val Gly Met Ser Phe Thr Asn Thr Ser Pro Leu Met Phe
    187         140                 145                 150
    189 ccc tgc cgt tct tct gag atc gga cta ggc aca aac cct ctt tct tgt      534
    190 Pro Cys Arg Ser Ser Glu Ile Gly Leu Gly Thr Asn Pro Leu Ser Cys
    191     155                 160                 165
```

RAW SEQUENCE LISTING   DATE: 06/17/2002
PATENT APPLICATION: US/10/060,848   TIME: 13:39:04

Input Set : A:\12557-002001.txt
Output Set: N:\CRF3\06172002\J060848.raw

```
193 tgt gcc aac tcg gaa aag aca gaa gac agt ttt ttg tta gac atg gct      582
194 Cys Ala Asn Ser Glu Lys Thr Glu Asp Ser Phe Leu Leu Asp Met Ala
195 170                 175                 180                 185
197 act aca act gtt gct cta gga aag gtt gag ctg gca aat tgt cgc ggt      630
198 Thr Thr Thr Val Ala Leu Gly Lys Val Glu Leu Ala Asn Cys Arg Gly
199                 190                 195                 200
201 aaa aca caa att ccc tca gca tgg ggt gcc gat tct aaa ggc aat cca      678
202 Lys Thr Gln Ile Pro Ser Ala Trp Gly Ala Asp Ser Lys Gly Asn Pro
203                 205                 210                 215
205 tca aca gac aca caa gtt gtt tta cat ggt ggc gga ctt ttg cct tta      726
206 Ser Thr Asp Thr Gln Val Val Leu His Gly Gly Gly Leu Leu Pro Leu
207             220                 225                 230
209 ggc ggt ata gaa gag acg gga tct tac aaa gga acg ggt ctc tca atg      774
210 Gly Gly Ile Glu Glu Thr Gly Ser Tyr Lys Gly Thr Gly Leu Ser Met
211     235                 240                 245
213 atg ggt gaa ttg ttt tgt gga att ttg gca ggg tca agt ttt gga aaa      822
214 Met Gly Glu Leu Phe Cys Gly Ile Leu Ala Gly Ser Ser Phe Gly Lys
215 250                 255                 260                 265
217 aat gta cga tta tgg ggg caa tca cac aaa gcc gct gac aat ggc caa      870
218 Asn Val Arg Leu Trp Gly Gln Ser His Lys Ala Ala Asp Asn Gly Gln
219                 270                 275                 280
221 tgt ttt gtt gct att gat caa gaa tgt ttt gcc cca gga ttt gct cct      918
222 Cys Phe Val Ala Ile Asp Gln Glu Cys Phe Ala Pro Gly Phe Ala Pro
223             285                 290                 295
225 cgt tta caa caa ttt ttg gat gaa aca cgg aat ttg aaa ccg att tct      966
226 Arg Leu Gln Gln Phe Leu Asp Glu Thr Arg Asn Leu Lys Pro Ile Ser
227             300                 305                 310
229 gaa gaa aag cct gtt cta gtg cct gga gat cct gaa aga atg aat aca     1014
230 Glu Glu Lys Pro Val Leu Val Pro Gly Asp Pro Glu Arg Met Asn Thr
231     315                 320                 325
233 gaa tat agc caa aag gct gga ggt ttg gta tac caa gaa ggg cag ata     1062
234 Glu Tyr Ser Gln Lys Ala Gly Gly Leu Val Tyr Gln Glu Gly Gln Ile
235 330                 335                 340                 345
237 aaa gct ttg gaa gag ttg gcc aca aaa tgt gat gtt caa atg ttc tca     1110
238 Lys Ala Leu Glu Glu Leu Ala Thr Lys Cys Asp Val Gln Met Phe Ser
239             350                 355                 360
241 tac aaa cga cta aaa tgaggatgag atttaaatat tttttgtgt agctgaaact     1165
242 Tyr Lys Arg Leu Lys
243             365
245 gacttcaaac gagaaatgaa caatttccta aaaagcagtt agataagggt ttatttttca   1225
246 tttatttatt ttttaacctc attttttata tacgaagcag atatgactga aactggaggt   1285
247 ggtgattctg ttgaatctgc aagtgtttat gctaactctg tttgtgaaat gtgcggaaat   1345
248 tatgaggttc aacttcaaac aattcaaagc agtcaggata ctctcaggga gaaattggca   1405
249 gctgctaaag aattgtatga gaaatatggc aaggaattga cagaagagag gcattatcga   1465
250 aaggaattgg aaattaaatt tgctgcttta aatgaagaaa ctgaagggaa aattcagcaa   1525
```

W--> 251 **tgtattacca atacagaaga ctttgacagc gtattgcctt ctcagtaaaa aacaanaagc**   1585
W--> 252 **tgatttgtct gttttggaat cncaattaga attggctagg aatcgtcaaa aagagcttca**   1645

```
253 agaacaattg gttttgttaa atgaaaggta tgaaaaactt ttacatttaa aatctcaatg   1705
254 tgctgaagaa atgcgtgaac aacaaattga actgcctcaa acagttgaag aacttcaatt   1765
```

```
W--> 255 tttggcattg cagttganag aggaattgat aactgaacgt gcagcacgtg agcatgaaag   1825
     256 gagggaatta aatgatgaat tggctatggc acgtcaacag cttgttgaat tggaaatttg   1885
W--> 257 tccnagagaa aatgaagaat gaattttatg atatataaaa atatatttat tttgctcaaa   1945
W--> 258 tagnttttat aaattttaag agctgataga aaaatttagt tttgnaattt ttgaagaata   2005
W--> 259 tattttntac ggtttgcacn ccttagaatg gttttgtttt aataaatgcn cnggttggna   2065
     260 aaaaaaaaaa aaaaaaaaaa aaa                                             2088
     262 <210> SEQ ID NO: 3
     263 <211> LENGTH: 366
     264 <212> TYPE: PRT
     265 <213> ORGANISM: Meloidogyne incognita
     267 <400> SEQUENCE: 3
     268 Met Asn Tyr Ser Lys Asp Ala Pro Glu Phe Val Val Ser Pro Lys Asp
     269   1               5                  10                  15
     270 Ala Arg Glu Phe Val Val Lys Cys Met Gln Thr Val Gly Thr Ser Pro
     271              20                  25                  30
     272 Asp His Ala Gly Gln Leu Ala Asp Leu Leu Leu Asp Ala Asp Leu Val
     273          35                  40                  45
     274 Gly His Tyr Ser His Gly Leu Asn Arg Leu His Ile Tyr Val Asp Asp
     275      50                  55                  60
     276 Val Lys Asn Gly Val Lys Gly Asn Gly Val Pro Lys Val Leu Lys Gln
     277  65                  70                  75                  80
     278 Lys Gly Gly Thr Ala Trp Val Asp Gly Glu Asn Leu Leu Gly Ala Val
     279                  85                  90                  95
     280 Val Gly Asn Phe Cys Thr Asp Leu Ala Ile Lys Leu Ala Lys Glu Phe
     281              100                 105                 110
     282 Gly Val Ala Trp Val Val Thr Lys Asn Ser Asn His Tyr Gly Ala Cys
     283          115                 120                 125
     284 Gln His Tyr Thr Lys Lys Ile Ala Asn Ala Gly Met Val Gly Met Ser
     285      130                 135                 140
     286 Phe Thr Asn Thr Ser Pro Leu Met Phe Pro Cys Arg Ser Ser Glu Ile
     287 145                 150                 155                 160
     288 Gly Leu Gly Thr Asn Pro Leu Ser Cys Cys Val Asn Ser Glu Lys Thr
     289              165                 170                 175
     290 Gly Asp Ser Phe Leu Leu Asp Met Ala Thr Thr Thr Val Ala Leu Gly
     291              180                 185                 190
     292 Lys Val Glu Leu Ala Asp Cys Arg Gly Lys Thr Gln Ile Pro Ser Thr
     293              195                 200                 205
     294 Trp Gly Ala Asp Ser Lys Gly Asn Pro Ser Thr Asp Thr Gln Val Val
     295      210                 215                 220
     296 Leu His Gly Gly Gly Leu Leu Pro Leu Gly Gly Ile Glu Glu Thr Gly
     297 225                 230                 235                 240
     298 Ser Tyr Lys Gly Thr Gly Leu Ser Met Met Gly Glu Leu Phe Cys Gly
     299              245                 250                 255
     300 Ile Leu Ala Gly Ser Ser Phe Gly Lys Asn Val Arg Leu Trp Gly Gln
     301              260                 265                 270
     302 Ser His Lys Ala Ala Asp Asn Gly Gln Cys Phe Val Ala Ile Asp Gln
     303          275                 280                 285
     304 Glu Cys Phe Ala Pro Gly Phe Ala Pro Arg Leu Gln Gln Phe Leu Asp
     305          290                 295                 300
```

RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 06/17/2002
PATENT APPLICATION: US/10/060,848   TIME: 13:39:05

Input Set : A:\12557-002001.txt
Output Set: N:\CRF3\06172002\J060848.raw

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:1; N Pos. 1303
Seq#:2; N Pos. 409,1581,1607,1783,1889,1949,1990,2012,2025,2055,2057,2064
Seq#:2; Xaa Pos. 128
Seq#:4; Xaa Pos. 128
Seq#:6; N Pos. 382

VERIFICATION SUMMARY   DATE: 06/17/2002
PATENT APPLICATION: **US/10/060,848**   TIME: 13:39:05

Input Set : **A:\12557-002001.txt**
Output Set: **N:\CRF3\06172002\J060848.raw**

```
L:12  M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:34  M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:1
L:133 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:1 after pos.:1282
L:148 M:258 W: Mandatory Feature missing, <220> not found for SEQ ID#:2
L:181 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:390
L:182 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:438
L:251 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:1525
L:252 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:1585
L:255 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:1765
L:257 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:1885
L:258 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:1945
L:259 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:2005
L:340 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:112
L:417 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:6 after pos.:360
```